MULTIMEDIA UNIVERSITY®

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FINAL EXAMINATION

TRIMESTER 2, 2018/2019

HPC2011 –
INTRODUCTORY COURSE IN PHARMACOLOGY

4 MARCH 2019
2:30 pm – 4:30 pm
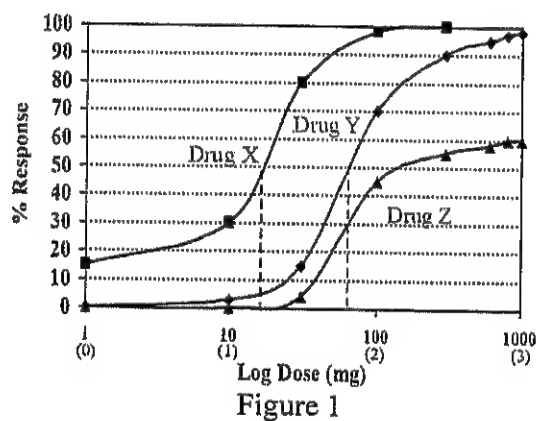(2 Hours)

INSTRUCTIONS TO STUDENTS .

1. This question paper consists of 4 pages with 5 questions only.

2. Answer **ALL** questions. All questions carry equal 10 marks and the distribution of the marks for each question is given.

3. Please print all your answers in the Answer Booklet provided.

SHORT ANSWER TYPE (SAT) QUESTIONS

Answer ALL questions [50 marks, 10 marks each]

Question 1

A. Drug A is administered to a patient and acts on a particular receptor. Unfortunately, it is given overdose. Drug B is then administered to block the receptor. The effects of drug B results in a reduction in the effect of drug A. Briefly explain the mechanism of action by drug B.   [1 mark]

B. Hasan has sore throat and he used special technique to deliver the medicine. The medicine is unstable at gastric pH. Identify the route he used to administrate the drug and justify one benefit using this route.   [1 mark]

C. What is an orphan drug? Give TWO justification why orphan drugs are abandoned after preclinical trials?   [3 marks]

D. Desensitization is a common biological phenomenon observed in many drug receptors. What is receptor desensitization? Name ONE of the mechanism involve in receptor desensitization.   [1 mark]

E. The log response curve below shows three agonist drugs X,Y and Z. Briefly explain the agonist effect, efficacy and potency of these three drugs.

Figure 1

[4 marks]

Continued...

Question 2

A. Briefly explain the inositol trisphosphate second messenger system which may result in the contraction of the muscle cell. [2 marks]

B. What is exocytosis? Explain the role of calcium ion in exocytosis. [2 marks]

C. Name TWO main transport mechanisms that maintain the ionic gradient across the plasma membrane. [2 marks]

D. Describe how retinoblastoma protein (Rb protein) can contribute to cell proliferation and cancer. [3 marks]

E. B-cell lymphoma 2 (Bcl-2) plays a role in cell survival and oncogenesis. Briefly explain, how does this protein lead to apoptosis. [1 mark]

Question 3

A. Describe briefly FOUR factors which affect drug absorption. [2 marks]

B. You measured the volume of distribution (V_d) for two different drugs. Drug A has a V_d value of 100L while drug B has a V_d value of 1L. What do the values of V_d tell us about the distribution of drugs A and B in the body? [1 mark]

C. Why does parenteral administration generally act more rapidly than topical or enteral administration? Give ONE example of the parenteral administration. [1 mark]

D. Explain briefly why the polar drugs are generally not considered as good drug candidates for the treatment of the brain disorders. [1 mark]

E. Why is it important to make sure the lipophilic xenobiotics do not stay in the body for too long? [1 mark]

F. Explain briefly why the two-compartment model gives a more accurate representation of the pharmacokinetic behavior, compared to the one-compartment model. [2 marks]

G. List TWO differences between Phase I and Phase II reactions in the drug metabolism. [2 marks]

Continued...

Question 4

A. In Alzheimer's disease, there is a deficiency of cholinergic neuronal function in the brain. Based on this information, explain briefly ONE strategy and its mechanism for the treatment of the symptoms of Alzheimer's disease.   [2 marks]

B. Explain briefly how local anesthetics exert their effects.   [1 mark]

C. Why should foods containing tyramine be avoided when taken with the monoamine oxidase inhibitors for depression treatment?   [2 marks]

D. What is the application of antihistamines drug? Explain briefly how antihistamines work.
                    [1 mark]

E. Describe briefly TWO therapeutic effects of non-steroidal anti-inflammatory drugs (NSAID).   [2 marks]

F. Describe briefly TWO modes of resistance to anticancer drugs.   [2 marks]

Question 5

A. What is the difference between adverse drug reaction and drug side effect?   [1 mark]

B. What is drug tolerance? Give ONE possible mechanism.   [1 mark]

C. Describe briefly TWO strategies that aim to reduce bias in the clinical trials.   [2 marks]

D. What is the application of the bioassay? List TWO criteria to evaluate bioassay.   [2 marks]

E. Describe briefly THREE strategies for the hypertension treatment. List ONE drug class for each strategy.   [3 marks]

F. Explain briefly how angiotensin-converting-enzyme inhibitors (ACE inhibitors) help to treat heart failure.   [1 mark]

End of paper